

# Chapter 13

## The Black Death<sup>1</sup>

Afro-Eurasia, 1346-1350 CE

### Historical Context

The Mongol peace that made the Persian Ilkhanid dynasty (1256-1353) and the Chinese Yuan dynasty (1279-1368) sister empires nurtured a level of economic exchange and artistic communication greater than in the most cosmopolitan days of the early Roman/Han Silk Road. But the new caravan routes that spanned Central Asia could carry microbes as well as people. The plague that had long been endemic in country rats spread by fleas to city rats and other animals, including humans. As early as 1346, travelers reported millions killed in China, Central Asia, and the Middle East. In Europe and Egypt, approximately a third of the population perished. In some cities, the death toll was greater than half. This pandemic plague of 1348-1350 is sometimes called the Black Death, after the discolored wounds it caused.

### Thinking Historically

#### *Considering cause and Effect*

The study of history, like the practice of medicine, is a process of understanding the causes of certain effects. In medicine the effects are diseases: in history they are more varied events. Nevertheless, understanding the causes of things is central to both disciplines. For medical specialists, the goal of understanding causes is implicitly a part of the process of finding a cure. Historians rarely envision “cures” for social ills, but many believe that an understanding of cause and effect can improve society’s chances of progress.

Still, the most hopeful medical researcher or historian would agree that the process of relating cause and effect, of finding causes and explaining effects, is fraught with difficulties. We will explore some of those difficulties in this chapter.

### Mark Wheelis<sup>2</sup>

#### *Biological Warfare at the 1346 Siege of Caffa*

We are used to thinking of biological warfare as a recently developed threat. This article, published in a journal for public health professionals, suggests a longer history. According to the author, how and where did the Black Death originate? What was the significance of the Mongol siege of Caffa in 1346? The author draws on the contemporary account of the Black Death by Gabriele de Mussis. On what points does he agree and disagree with de Mussis?

### Thinking Historically

The author of this selection, a professor of microbiology at the University of California, was trained as a bacterial physiologist and geneticist, but for more than the last ten years his research has concentrated on the history and control of biological weapons. Notice how he explains the causes of such events as the spread of plague and the infection at Caffa. Would you call his way of finding causes the method of a medical researcher or a historian, or does he employ the methods of both? If you see a distinction, try to note the places where he is thinking more like a medical scientist and those where he is thinking more like a historian.

<sup>1</sup> Reilly, Kevin. “The Black Death” *Worlds of History, A Comparative Reader*. Vol. One, Third Edition. Boston: Bedford/St. Martin’s. 2007. 422-454. Print.

<sup>2</sup> Mark Wheelis, “Biological Warfare at the 1346 Siege of Caffa,” *Emerging Infectious Diseases*, I, no. 9 (September, 2002): 971-975. The journal is published by the U.S. Centers for Disease Control and Prevention (CDC), Atlanta, and is also available online at <http://www.ded.gov/ncidod/EID/vol8no9/01-0536.htm>.

1  
2 The Black Death, which swept through Europe, the Near East, and North Africa in the mid-  
3 fourteenth-century, was probably the greatest public health disaster in recorded history and one of the  
4 most dramatic examples ever of emerging or reemerging disease. Europe lost an estimated one-quarter to  
5 one-third of its population, and the mortality in North Africa and the Near East was comparable. China,  
6 India, and the rest of the Far East are commonly believed to have also been severely affected, but little  
7 evidence supports that belief.

8 A principal source on the origin of the Black Death is a memoir by the Italian Gabriele de'  
9 Mussis. This memoir has been published several times in its original Latin and has recently been  
10 translated into English (although brief passages have been previously published in translation.) This  
11 narrative contains some startling assertions: that the Mongol army hurled plague-infested cadavers into  
12 the besieged Crimean city of Caffa, thereby transmitting the disease to the inhabitants; and that fleeing  
13 survivors of the siege spread plague from Caffa to the Mediterranean basin. If this account is correct,  
14 Caffa should be recognized as the site of the most spectacular incident of biological warfare ever, with the  
15 Black Death as its disastrous consequence. After analyzing these claims, I have concluded that it is  
16 plausible that the biological attack took place as described and was responsible for infecting the  
17 inhabitants of Caffa; however, the event was unimportant in the spread of the plague pandemic.  
18

## 19 **Origin of the Fourteenth-Century Pandemic**

20

21 The disease that caused this catastrophic pandemic has, since Hecker, generally been considered  
22 to have been a plague, a zoonotic disease caused by the gram-negative bacterium *Yersinia pestis*, the  
23 principal reservoir for which is wild rodents. The ultimate origin of the Black Death is uncertain – China,  
24 Mongolia, India, central Asia, and southern Russia have all been suggested. Known fourteenth-century  
25 sources are of little help; they refer repeatedly to an eastern origin, but none of the reports is firsthand.  
26 Historians generally agree that the outbreak moved west out of the steppes north of the Black and Caspian  
27 Seas, and its spread through Europe and the Middle East is fairly well documented (see Map 12.1).  
28 However, despite more than a century of speculation about an ultimate origin further east, the requisite  
29 scholarship using Chinese and central Asian sources has yet to be done. In any event, the Crimea clearly  
30 played a pivotal role as the proximal source from which the Mediterranean Basin was infected.  
31

## 32 **Historical Background to the Siege of Caffa**

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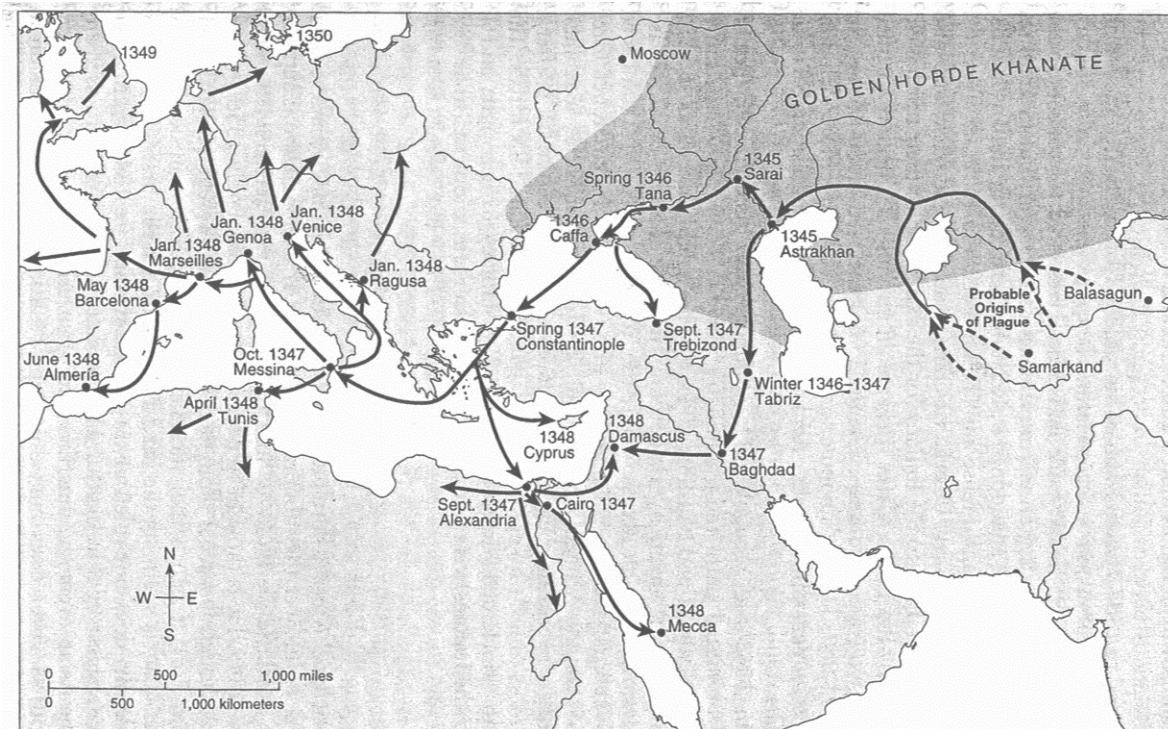
34 Caffa (now Feodosija, Ukraine) was established by Genoa in 1266 by agreement with the Khan of  
35 the Golden Horde. It was the main port for the great Genoese merchant ships, which connected there to a  
36 coastal shipping industry in Tana (now Azov, Russia) on the Don River. Trade along the Don connected  
37 Tana to Central Russia, and overland caravan routes linked it to Sarai and thence to the Far East.

38 Relations between Italian traders and their Mongol hosts were uneasy, and in 1307 Toqtai, Khan  
39 of the golden Horde, arrested the Italian residents of Sarai, and besieged Caffa. The cause was apparently  
40 Toqtai's displeasure at the Italian trade in Turkic slaves (sold for soldiers to the Mameluke Sultanate.)  
41 The Genoese resisted for a year, but in 1308 set fire to their city and abandoned it. Relations between the  
42 Italians and the Golden Horde remained tense until Toqtai's death in 1312.

43 Toqtai's successor, Özbek, welcomed the Genoese back, and also ceded land at Tana to the  
44 Italians for the expansion of their trading enterprise. By the 1340s, Caffa was again a thriving city,  
45 heavily fortified within two concentric walls. The inner wall enclosed 6,000 houses, the outer 11,000. The  
46 city's population was highly cosmopolitan, including Genoese, Venetian, Greeks, Armenians, Jews,  
47 Mongols, and Turkic peoples.

48 In 1343, the Mongols under Janibeg (who succeeded Özbek in 1340) besieged Caffa and the  
49 Italian enclave at Tana following a brawl between Italians and Muslims in Tana. The Italian merchants in  
50 Tana fled to Caffa (which, by virtue of its location directly on the coast, maintained maritime access  
51 despite the siege). The siege of Caffa lasted until February 1344, when it was lifted after an Italian relief  
52 force killed 15,000 Mongol troops and destroyed their siege machines. Janibeg renewed the siege in 1345

1 but was again forced to lift it after a year, this time by an epidemic of plague that devastated his forces.  
2 The Italians blockaded Mongol ports, forcing Janibeg to negotiate, and in 1347 the Italians were allowed  
3 to reestablish their colony in Tana.  
4



Map 12.1 Tentative Chronology of the Initial Spread of Plague in the Mid-Fourteenth Century.

## 5 Gabriele de' Mussis

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7  
8 Gabriele de' Mussis, born circa 1280, practiced as a notary in the town of Piacenza, over the  
9 mountains just north of Genoa. Tononi summarizes the little we know of him. His practice was active in  
10 the years 1300-1349. He is thought to have died in approximately 1356.

11 Although Henschel thought de' Mussis was present at the siege of Caffa, Tononi asserts that the  
12 Piacenza archives contain deeds signed by de' Mussis spanning the period 1344 through the first half of  
13 1346. While this does not rule out travel to Caffa in late 1346, textual evidence suggests that he did not. He  
14 does not claim to have witnessed any of the Asian events he describes and often uses a passive voice for  
15 descriptions. After describing the siege of Caffa, de' Mussis goes on to say, "Now it is time that we  
16 passed from east to west to discuss all the things which we ourselves have seen. . . ."

## 17 The Narrative of Gabriele de' Mussis

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19  
20 The de' Mussis account is presumed to have been written in 1348 or early 1349 because of its  
21 immediacy and the narrow time period described. The original is lost, but a copy is included in a  
22 compilation of historical and geographic accounts by various authors, dating from approximately 1367.  
23 The account begins with an introductory comment by the scribe who copied the documents: "In the name  
24 of God, Amen. Here begins an account of the disease or mortality which occurred in 1348, put together  
25 by Gabriele de' Mussis of Piacenza.

26 The narrative begins with an apocalyptic speech by God, lamenting the depravity into which  
27 humanity has fallen and describing the retribution intended. It goes on:

28 "... In 1346, in the countries of the East, countless numbers of Tartars and Saracens were struck  
29 down by a mysterious illness which brought sudden death. Within these countries broad regions, far-

1 spreading provinces, magnificent kingdoms, cities, towns and settlements, ground down by illness and  
2 devoured by dreadful death, were soon stripped of their inhabitants. An eastern settlement under the rule  
3 of the Tartars called Tana, which lay to the north of Constantinople and was much frequented by Italian  
4 merchants, was totally abandoned after an incident there which led to its being besieged and attacked by  
5 hordes of Tartars who gathered in a short space of time. The Christian merchants, who had been driven  
6 out by force, were so terrified of the power of the Tartars that, to save themselves and their belongings,  
7 they fled in an armed ship to Caffa, a settlement in the same part of the world which had been founded  
8 long ago by the Genoese.

9 “Oh God! See how the heathen Tartar races, pouring together from all sides, suddenly invested  
10 the city of Caffa and besieged the trapped Christians there for almost three years. There, hemmed in by an  
11 immense army, they could hardly draw breath, although food could be shipped in, which offered them  
12 some hope. But behold, the whole army was affected by a disease which overran the Tartars and killed  
13 thousands upon thousands every day. It was as though arrows were raining down from heaven to strike  
14 and crush the Tartars’ arrogance. All medical advice and attention was useless; the Tartars died as soon as  
15 the signs of disease appeared on their bodies: swellings in the armpit or groin caused by coagulating  
16 humors, followed by a putrid fever.

17 “The dying Tartars, stunned and stupefied by the immensity of the disaster brought about by the  
18 disease, and realizing that they had no hope of escape, lost interest in the siege. But they ordered corpses  
19 to be placed in catapults<sup>3</sup> and lobbed into the city in the hope that the intolerable stench would kill  
20 everyone inside.<sup>4</sup> What seemed like mountains of dead were thrown into the city, and the Christians could  
21 not hide or flee or escape from them, although they dumped as many of the bodies as they could in the  
22 sea. And soon the rotting corpses tainted the air and poisoned the water supply, and the stench was so  
23 overwhelming that hardly one in several thousand was in a position to flee the remains of the Tartar army.  
24 Moreover, one infected man could carry the poison to others, and infect people and places with the  
25 disease by look alone. No one knew, or could discover, a means of defense.

26 “Thus almost everyone who had been in the East, or in the regions to the south and north, fell  
27 victim to sudden death after contracting this pestilential disease, as if struck by a lethal arrow which  
28 raised a tumor on their bodies. The scale of the mortality and the form which it took persuaded those who  
29 lived, weeping and lamenting, through the bitter events of 1346 to 1348 – the Chinese, Indians, Persians,  
30 Medes, Kurds, Armenians, Cilicians, Georgians, Mesopotamians, Nubians, Ethiopians, Turks, Egyptians,  
31 Arabs, Saracens, and Greeks (for almost all the East has been affected) – that the last judgment had come.

32 “. . . As it happened, among those who escaped from Caffa by boat were a few sailors who had  
33 been infected with the poisonous disease. Some boats were bound for Genoa, others went to Venice and  
34 to other Christian areas. When the sailors reached these places and mixed with the people there, it was as  
35 if they had brought evil spirits with them: every city, every settlement, every place was poisoned by the  
36 contagious pestilence, and their inhabitants, both men and women, died suddenly. And when one person  
37 had contracted the illness, he poisoned his whole family even as he fell and died, so that those preparing  
38 to bury his body were seized by death in the same way. Thus death entered through the windows, and as  
39 cities and towns were depopulated their inhabitants mourned their dead neighbors.”

40 The account closes with an extended description of the plague in Piacenza, and a reprise of the  
41 apocalyptic vision with which it begins.

## 42 43 **Commentary**

44  
45 In this narrative, de’ Mussis makes two important claims about the siege of Caffa and the Black  
46 Death: that plague was transmitted to Europeans by the hurling of diseased cadavers into the besieged city  
47 of Caffa, and that Italians fleeing from Caffa brought it to the Mediterranean ports.

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<sup>3</sup> Technically trebuchets, not catapults. Catapults hurl objects by the release of tension on twisted cordage; they are not capable of hurling loads over a few dozen kilograms. Trebuchets are counter-weight-driven hurling machines, very effective for throwing ammunition weighing a hundred kilos or more.

<sup>4</sup> Medieval society lacked a coherent theory of disease causation. Three notions coexisted in a somewhat contradictory mixture: 1) disease was a divine punishment for individual or collective transgression; 2) disease was the result of “miasma,” or the stench of decay; and 3) disease was the result of person-to-person contagion.

## **Biological Warfare at Caffa**

De' Mussis's account is probably secondhand and is uncorroborated; however, he seems, in general, to be a reliable source, and as a Piacenzian he would have had access to eyewitnesses of the siege. Several considerations incline me to trust his account: this was probably not the only, nor the first, instance of apparent attempts to transmit disease by hurling biological material into besieged cities; it was within the technical capabilities of besieging armies of the time; and it is consistent with medieval notions of disease causality.

Tentatively accepting that the attack took place as described, we can consider two principal hypotheses for the entry of plague into the city: it might, as de' Mussis asserts, have been transmitted by the hurling of plague cadavers; or it might have entered by rodent-to-rodent transmission from the Mongol encampments into the city.

Diseased cadavers hurled into the city could easily have transmitted plague, as defenders handled the cadavers during disposal. Contact with infected material is a known mechanism of transmission; for instance, among 284 cases of plague in the United States in 1970-1995 for which a mechanism of transmission could be reasonably inferred, 20 percent were thought to be by direct contact. Such transmission would have been especially likely at Caffa, where cadavers would have been badly mangled by being hurled, and many of the defenders probably had cut or abraded hands from coping with the bombardment. Very large numbers of cadavers were possibly involved, greatly increasing the opportunity for disease transmission. Since disposal of the bodies of victims in a major outbreak of lethal disease is always a problem, the Mongol forces may have used their hurling machines as a solution to their mortuary problem, in which case many thousands of cadavers could have been involved. De' Mussis's description of "mountains of dead" might have been quite literally true.

Thus it seems plausible that the events recounted by de' Mussis could have been an effective means of transmission of plague into the city. The alternative, rodent-to-rodent transmission from the Mongol encampments into the city, is less likely. Besieging forces must have camped at least a kilometer away from the city walls. This distance is necessary to have a healthy margin of safety from arrows and artillery and to provide space for logistical support and other military activities between the encampments and the front lines. Front-line location must have been approximately 250-300 meters from the walls; trebuchets are known from modern reconstruction to be capable of hurling 100 kg more than 200 m, and historical sources claim 300 m as the working range of large machines. Thus, the bulk of rodent nests associated with the besieging armies would have been located a kilometer or more away from the cities, and none would have likely been closer than 250 m. Rats are quite sedentary and rarely venture more than a few tens of meters from their nest. It is thus unlikely that there was any contact between the rat populations within and outside the walls.

Given the many uncertainties, any conclusion must remain tentative. However, the considerations above suggest that the hurling of plague cadavers might well have occurred as de' Mussis claimed, and if so, that this biological attack was probably responsible for the transmission of the disease from the besiegers to the besieged. Thus, this early act of biological warfare, if such it were, appears to have been spectacularly successful in producing casualties, although of no strategic importance (the city remained in Italian hands, and the Mongols abandoned the siege).

## **Crimea as the Source of European and Near Eastern Plague**

There has never been any doubt that plague entered the Mediterranean from the Crimea, following established maritime trade routes. Rat infestations in the holds of cargo ships would have been highly susceptible to the rapid spread of plague, and even if most rats died during the voyage, they would have left abundant hungry fleas that would infect humans unpacking the holds. Shore rats foraging on board recently arrived ships would also become infected, transmitting plague to city rat populations.

Plague appears to have been spread in a stepwise fashion, on many ships rather than on a few [see Map 12.1], taking over a year to reach Europe from the Crimea. This conclusion seems fairly firm, as the

1 dates for the arrival of plague in Constantinople and more westerly cities are reasonably certain. Thus de'  
2 Mussis was probably mistaken in attributing the Black Death to fleeing survivors of Caffa, who should  
3 not have needed more than a few months to return to Italy.

4 Furthermore, a number of other Crimean ports were under Mongol control, making it unlikely  
5 that Caffa was the only source of infected ships heading west. And the overland caravan routes to the  
6 Middle East from Serai and Astrakhan insured that plague was also spreading south [Map 12.1], whence  
7 it would have entered Europe in any case. The siege of Caffa and its gruesome finale thus are unlikely to  
8 have been seriously implicated in the transmission of plague from the Black Sea to Europe.

## 9 10 **Conclusion**

11  
12 Gabriele de' Mussis's account of the origin and spread of plague appears to be consistent with  
13 most known facts, although mistaken in its claim that plague arrived in Italy directly from the Crimea. His  
14 account of biological attack is plausible, consistent with the technology of the time, and it provides the  
15 best explanation of disease transmission into besieged Caffa. This thus appears to be one of the first  
16 biological attacks recorded and among the most successful of all time.

17 However, it is unlikely that the attack had a decisive role in the spread of plague to Europe. Much  
18 maritime commerce probably continued throughout this period from other Crimean ports. Overland  
19 caravan routes to the Middle East were also unaffected. Thus, refugees from Caffa would most likely  
20 have constituted only one of several streams of infected ships and caravans leaving the region. The siege  
21 of Caffa, for all of its dramatic appeal, probably had no more than anecdotal importance in the spread of  
22 plague, a macabre incident in terrifying times.

23 Despite its historical unimportance, the siege of Caffa is a powerful reminder of the horrific  
24 consequences when disease is successfully used as a weapon. The Japanese use of plague as a weapon in  
25 World War II and the huge Soviet stockpiles of *Y. pestis* prepared for use in an all-out war further remind  
26 us that plague remains a very real problem for modern arms control, six and a half centuries later.

Gabriele De' Mussis<sup>5</sup>  
*Origins of the Black Death*

Gabriele de' Mussis (d. 1356) was a lawyer who lived in the northern Italian city of Piacenza. The previous reading introduced you to de' Mussis and the importance of his history of the Black Death. Since Wheelis quoted abundantly from the story of the siege of Caffa, we pick up the story in de' Mussis's words of the spread of the plague to Europe where, as he wrote, he had direct evidence. How would you rate de' Mussis as an eyewitness observer? According to his evidence, how did the Black Death spread in Italy? How deadly was it?

*Thinking Historically*

As in the previous selection, there are two causal chains in this account, but in this case they are not medical and historical. Rather, reminiscent of the readings on the First Crusade, they are divine and human chains of causation. What according to the author were the divine or religious causes of the Black Death? What were the human, physical, or scientific causes? What remedies does each type of cause call for?

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Now it is time that we passed from east to west, to discuss all the things which we ourselves have seen, or known, or consider likely on the basis of the evidence, and, by so doing, to show forth the terrifying judgments of God. Listen everybody, and it will set tears pouring from your eyes. For the Almighty has said: "I shall wipe man, who I created, off the face of the earth. Because he is flesh and blood, let him be turned to dust and ashes. My spirit shall not remain among man."

- "What are you thinking of, merciful God, thus to destroy your creation and the human race; to order and command its sudden annihilation in this way? What has become of your mercy; the faith of our fathers; the blessed virgin, who holds sinners in her lap; the precious death of Christ on the cross and our wonderful redemption? Kind God, I beg that your anger may cease, that you do not destroy sinners in this way, and, because you desire mercy rather than sacrifice, that you turn away all evil from the penitent, and do not allow the just to be condemned with the unjust."

- "I hear you, sinner, dropping words into my ears. I bid you weep. The time for mercy has passed. I, God, am called to vengeance. It is my pleasure to take revenge on sin and wickedness. I shall give my signs to the dying; let them take steps to provide for the health of their souls."

As it happened, among those who escaped from Caffa by boat were a few sailors who had been infected with the poisonous disease. Some boats were bound for Genoa, others went to Venice and to other Christian areas. . . .

- "We Genoese and Venetians bear the responsibility for revealing the judgments of God. Alas, once our ships had brought us to port we went to our homes. And because we had been delayed by tragic events, and because among us there were scarcely ten survivors from a thousand sailors, relations, kinsmen and neighbors flocked to us from all sides. But to our anguish, we were carrying the darts of death. While they hugged and kissed us we were spreading poison from our lips even as we spoke."

When they returned to their own folk, these people speedily poisoned the whole family, and within three days the afflicted family would succumb to the dart of death. Mass funerals had to be held and there was not enough room to bury the growing numbers of dead. Priests and doctors, upon whom most of the care of the sick devolved, had their hands full in visiting the sick and, alas, by the time they left they too had been infected and followed the dead immediately to the grave. Oh fathers! Oh mothers! Oh children and wives! For a long time prosperity preserved you from harm, but one grave now covers you and the unfortunate alike. You who enjoyed the world and upon whom pleasure and prosperity smiled, who mingled joys with follies, the same tomb receives you and you are handed over as food for

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<sup>5</sup> *The Black Death*, trans. and ed. Rosemary Horrox (Manchester, England: Manchester University Press, 1994), 18-26.

1 worms. Oh hard death, impious death, bitter death, cruel death, who divides parents, divorces spouses,  
2 parts children separates brothers and sisters. We bewail our wretched plight. The past has devoured us,  
3 the present is gnawing our entrails, the future threatens yet greater dangers. What we labored to amass  
4 with feverish activity, we have lost in one hour.

5 Where are the fine clothes of gilded youth? Where is nobility and the courage of fighters, where  
6 the mature wisdom of elders and the regal throng of great ladies, where the pile of treasure and precious  
7 stones? Alas! All have been destroyed; thrust aside by death. To whom shall we turn, who can help us?  
8 To flee is impossible, to hide futile. Cities, fortresses, fields, woods, highways and rivers are ringed by  
9 thieves – which is to say by evil spirits, the executioners of the supreme Judge, preparing endless  
10 punishments for us all.

11 We can unfold a terrifying event which happened when an army was camped near Genoa. Four of  
12 the soldiers left the force in search of plunder and made their way to Rivarolo on the coast, where the  
13 disease had killed all inhabitants. Finding the houses shut up, and no one about, they broke into one of the  
14 houses and stole a fleece which they found on a bed. They then rejoined the army and on the following  
15 night the four of them bedded down under the fleece. When morning comes it finds them dead. As a  
16 result everyone panicked, and thereafter nobody would use the goods and clothes of the dead, or even  
17 handle them, but rejected them outright.

18 Scarcely one in seven of the Genoese survived. In Venice, where an inquiry was held into the  
19 mortality, it was found that more than 70 percent of the people had died, and that within a short period 20  
20 out of 24 excellent physicians had died. The rest of Italy, Sicily, and Apulia and the neighboring regions  
21 maintain that they have been virtually emptied of inhabitants. The people of Florence, Pisa, and Lucca,  
22 finding themselves bereft of their fellow residents, emphasize their losses. The Roman Curia at Avignon,  
23 the provinces on both sides of the Rhône, Spain, France, and the Empire cry up their griefs and disasters –  
24 all of which makes it extraordinarily difficult for me to give an accurate picture.

25 By contrast, what befell the Saracens can be established from trust-worthy accounts. In the city of  
26 Babylon alone (the heart of the Sultan's power), 480,000 of his subjects are said to have been carried off  
27 by disease in less than three months in 1348 – and this is known from the Sultan's register which records  
28 the names of the dead, because he receives a gold bezant for each person buried. I am silent about  
29 Damascus and his other cities, where the number of dead was infinite. In the other countries of the East,  
30 which are so vast that it takes three years to ride across them and which have a population of 10,000 for  
31 every one inhabitant of the west, it is credibly reported that countless people have died.

32 Everyone has a responsibility to keep some record of the disease and the deaths, and because I am  
33 myself from Piacenza I have been urged to write more about what happened there in 1348. . . .

34 I don't know where to begin. Cries and laments arise on all sides. Day after day one sees the  
35 Cross and the Host<sup>6</sup> being carried about the city, and countless dead being buried. The ensuing mortality  
36 was so great that people could scarcely snatch breath. The living made preparations for their burial, and  
37 because there was not enough room for individual graves, pits had to be dug in colonnades and piazzas,  
38 where nobody had ever been buried before. It often happened that man and wife, father and son, mother  
39 and daughter, and soon the whole household and many neighbors, were buried together in one place. The  
40 same thing happened in Castell' Arquato and Viguzzolo and in the other towns, villages, cities, and  
41 settlements, and last of all in the Val Tidone, where they had hitherto escaped the plague.

42 Very many people died. One Oberto de Sasso, who had come from the infected neighborhood  
43 around the church of the Franciscans, wished to make his will and accordingly summoned a notary and  
44 his neighbors as witnesses, all of whom, more than sixty of them, died soon after. At this time the  
45 Dominican friar Syfredo de Bardis, a man of prudence and great learning who had visited the Holy  
46 Sepulcher, also died, along with 23 brothers of the same house. There also died within a short time the  
47 Franciscan friar Bertolino Coxadocha of Piacenza, renowned for his learning and many virtues, along  
48 with 24 brother of the same house, nine of them on one day; seven of the Augustinians; the Carmelite  
49 friar Francesco Todischi with six of his brethren; four of the order of Mary; more than sixty prelates and  
50 parish priests from the city and district of Piacenza; many nobles; countless young people; numberless

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<sup>6</sup> The consecrated Eucharistic wafer. The reference is to priests taking the last sacrament to the dying.



1 women, particularly those who were pregnant. It is too distressing to recite any more, or to lay bare the  
2 wounds inflicted by great a disaster.

3 Let all creation tremble with fear before the judgment of God. Let human frailty submit to its  
4 creator. May a greater grief be kindled in all hearts, and tears well up in all eyes as future ages hear what  
5 happened in this disaster. When one person lay sick in a house no one would come near. Even dear  
6 friends would hide themselves away, weeping. The physician would not visit. The priest, panic-stricken,  
7 administered the sacraments with fear and trembling.

8 Listen to the tearful voices of the sick: "Have pity, have pity, my friends. At least say something,  
9 now that the hand of God has touched me."

10 "Oh father, why have you abandoned me? Do you forget that I am your child?"

11 "Mother, where have you gone? Why are you now so cruel to me when only yesterday you were  
12 so kind? You fed me at your breast and carried me within your womb for nine months."

13 "My children, whom I brought up with toil and sweat, why have you run away?"

14 Man and wife reached out to each other, "Alas, once we slept happily together but now we are  
15 separated and wretched."

16 And when the sick were in the throes of death, they still called out piteously to their family and  
17 neighbors, "Come here. I'm thirsty, bring me a drink of water. I'm still alive. Don't be frightened.  
18 Perhaps I won't die. Please hold me tight, hug my wasted body. You ought to be holding me in your  
19 arms."

20 At this, as everyone else kept their distance, somebody might take pity and leave a candle burning  
21 by the bed head as he fled. And when the victim had breathed his last, it was often the mother who  
22 shrouded her son and placed him in the coffin, or the husband who did the same for his wife, for  
23 everybody else refused to touch the dead body. . . .

24 I am overwhelmed, I can't go on. Everywhere one turns there is death and bitterness to be  
25 described. The hand of the Almighty strikes repeatedly, to greater and greater effect. The terrible  
26 judgment gains in power as time goes by.

27 - What shall we do? Kind Jesus, receive the souls of the dead, avert your gaze from our sins and  
28 blot out all our iniquities.

29 We know that whatever we suffer is the just reward of our sins. Now, therefore, when the Lord is  
30 enraged, embrace acts of penance, so that you do not stray from the right path and perish. Let the proud  
31 be humbled. Let misers, who withheld alms from the poor, blush for shame. Let the envious become  
32 zealous in almsgiving. Let lechers put aside their filthy habits and distinguish themselves in honest living.  
33 Let the raging and wrathful restrain themselves from violence. Let gluttons temper their appetites by  
34 fasting. Let the slaves of sloth arise and dress themselves in good works. Let adolescents and youths  
35 abandon their present delight in following fashion. Let there be good faith and equity among judges, and  
36 respect for the law among merchants. Let pettifogging lawyers study and grow wise before they put pen  
37 to paper. Let members of religious orders abandon hypocrisy. Let the dignity of prelates be put to better  
38 use. Let all of you hurry to set your feet on the way of salvation. And let the overweening vanity of great  
39 ladies, which so easily turns into voluptuousness, be bridled. It was against their arrogance that Isaiah  
40 inveighed: "Because the daughters of Sion are haughty, and have walked with stretched out necks and  
41 wanton glances of their eyes, and made a noise as they walked with their feet, and moved in a set pace. . .  
42 Thy fairest men also shall fall by the sword: and thy valiant ones in battle. And her gates shall lament and  
43 mourn: and she shall sit desolate on the ground" [Isaiah 3:16-26]. This was directed against the pride of  
44 ladies and young people.

45 For the rest, so that the conditions, causes, and symptoms of this pestilential disease should be  
46 made plain to all, I have decided to set them out in writing. Those of both sexes who were in health, and  
47 in no fear of death, were struck by four savage blows to the flesh. First, out of the blue, a kind of chilly  
48 stiffness troubled their bodies. They felt a tingling sensation, as if they were being pricked by the points  
49 of arrows. The next stage was fearsome attack which took the form of an extremely hard, solid boil. In  
50 some people this developed under the armpit and in others in the groin. As it grew more solid, its burning  
51 heat caused the patients to fall into an acute and putrid fever, with severe headaches. As it intensified its  
52 extreme bitterness could have various effects. In some cases it gave rise to an intolerable stench. In others

1 it brought vomiting of blood, or swellings near the place from which the corrupt humor arose; on the  
2 back, across the chest, near the thigh. Some people lay as if in a drunken stupor and could not be roused.  
3 Behold the swellings, the warning signs sent by the Lord.<sup>7</sup> All these people were in danger of dying.  
4 Some died on the very day the illness took possession of them, others on the next day, others – the  
5 majority – between the third and fifth day. There was no known remedy for the vomiting of blood. Those  
6 who fell into a coma, or suffered a swelling or the stink of corruption very rarely escaped. But from the  
7 fever it was sometimes possible to make a recovery. . . .

8 Truly, then was a time of bitterness and grief, which served to turn men to the Lord. I shall  
9 recount what happened. A warning was given by a certain holy person, who received it in a vision, that in  
10 cities, towns, and other settlements, everyone, male and female alike, should gather in their parish church  
11 on three consecutive days and, each with a lighted candle in their hand, hear with great devotion the mass  
12 of the Blessed Anastasia, which is normally performed at dawn on Christmas day, and they should  
13 humbly beg for mercy, so that they might be delivered from the disease through the merits of the holy  
14 mass. Other people sought deliverance through the mediation of a blessed martyr and others humbly  
15 turned to other saints, so that they might escape the abomination of disease. For among the aforesaid  
16 martyrs, some, as stories relate, are said to have died from repeated blows, and it was therefore the  
17 general opinion that they would be able to protect people against the arrows of death. Finally, in 1350, the  
18 most holy Pope clement ordained a general indulgence, to be valid for a year, which committed penance  
19 and guilt to all who were truly penitent and confessed. And as a result a numberless multitude of people  
20 made the pilgrimage to Rome, to visit with great reverence and devotion the basilicas of the blessed  
21 apostles Peter and Paul and St. John.

22 Oh, most dearly beloved, let us therefore not be like vipers, growing ever more wicked, but let us  
23 rather hold up our hands to heaven to beg for mercy on us all, for who but God shall have mercy on us?  
24 With this, I make an end. May the heavenly physician heal our wounds – our spiritual rather than our  
25 bodily wounds. To whom be the blessings and the praise and the glory for ever and ever, Amen.

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<sup>7</sup> A pun: bulla is a swelling, but it is also the word for the papal seal, and hence for a papal document (or bull). De' Mussis is playing on the idea of the swelling characteristic of the plague being God's seal, notifying the victim of his imminent fate.

Ahmad Al-Maqrizi  
*The Plague in Cairo*<sup>8</sup>

Ahmad al-Maqrizi<sup>9</sup> (1364-1442) became a historian after pursuing a career as an administrator in post-plague Cairo. While he wrote his history of the plague period more than fifty years after the event, he probably had access to contemporary sources that are now lost to us. Compare al-Maqrizi's account of the plague in Cairo with the prior accounts of the plague in Italy. How was the experience of the Black Death in Cairo similar to, and different from, the experience described by de' Mussis? What effects of the Black Death does each author describe, and which effects are listed only by one of the authors?

In January 1349, there appeared new symptoms that consisted of spitting up of blood. The disease caused on to experience an internal fever, followed by an uncontrollable desire to vomit; then one spat up blood and died. The inhabitants of a house were stricken one after the other, and in one night or two, the dwelling became deserted. Each individual lived with this fixed idea that he was going to die in this way. He prepared for himself a good death by distributing alms; he arranged for scenes of reconciliation and his acts of devotion multiplied.

By January 21, Cairo had become an abandoned desert, and one did not see anyone walking along the streets. A man could go from the Port Zuwayla to Bab al-Nasr<sup>10</sup> without encountering a living soul. The dead were very numerous, and all the world could think of nothing else. Debris piled up in the streets. People went around with worried faces. Everywhere one heard lamentations, and one could not pass by any house without being overwhelmed by the howling. Cadavers formed a heap on the public highway, funeral processions were so many that they could not file past without bumping into each other, and the dead were transported in some confusion. . . .

One began to have to search for readers of the Qur'an for funeral ceremonies, and a number of individuals quit their usual occupations in order to recite prayers at the head of funeral processions. In the same way, some people devoted themselves to smearing crypts with plaster; others presented themselves as volunteers to wash the dead or carry them. These latter folk earned substantial salaries. For example, a reader of the Qur'an took ten *dirhams*.<sup>11</sup> Also, hardly had he reached the oratory when he slipped away very quickly in order to officiate at a new [funeral]. Porters demanded 6 *dirhams* at the time they were engaged, and then it was necessary to match it [at the grave]. The gravedigger demanded fifty *dirhams* per grave. Most of the rest of these people died without having taken any profit from their gains. . . . Also families kept their dead on the bare ground, due to the impossibility of having them interred. The inhabitants of a house died by the tens and, since there wasn't a litter ready to hand, one had to carry them away in states. Moreover, some people appropriated for themselves without scruple the immovable and movable goods and cash of the former owners after their demise. But very few lived long enough to profit thereby, and those who remained alive would have been able to do without. . . .

Family festivities and weddings had no more place [in life]. No one issued an invitation to a feast during the whole time of the epidemic, and one did not hear any concert. The *vizier*<sup>12</sup> lifted a third of what he was owed from the responsible [for collecting] the tax on singers. The call to prayer was canceled in various places, and in the exact same way, those places [where prayer] was most frequent subsisted on a *muezzin*<sup>13</sup> alone. . . .

The men of the [military] troop and the cultivators took a world of trouble to finish their sowing [of fields]. The plague emerged at the end of the season when the fields were becoming green. How many times did one see a laborer, at Gaza, at Ramleh, and along other points of the Syrian littoral,<sup>14</sup> guide his

<sup>8</sup> John Aberth, *The Black Death: The Great Mortality of 1348-1350, A Brief History with Documents* (Boston: Bedford/St. Martin's, 2005), 84-87.

<sup>9</sup> ahk-MAHD ahl-mah-KREE-zee

<sup>10</sup> This was apparently the busiest boulevard in medieval Cairo.

<sup>11</sup> A silver coin used in the Muslim world.

<sup>12</sup> The chief minister of the caliph, or leader of the Muslim community.

<sup>13</sup> An official of the mosque who called the faithful to prayer from the minaret.

<sup>14</sup> The coastal land of southern Palestine, where the most fertile land was located.

1 plow being pulled by oxen suddenly fall down dead, still holding in his hands his plow, while the oxen  
2 stood at their place without a conductor.

3 It was the same in Egypt: When the harvest time came, there remained only a very small number  
4 of *fellahs*.<sup>15</sup> The soldiers and their valets left for the harvest and attempted to hire workers, promising  
5 them half of the crop, but they could not find anyone to help them reap it. They loaded the grain on their  
6 horses, did the mowing themselves, but, being powerless to carry out the greatest portion of the work,  
7 they abandoned this enterprise.

8 The endowments<sup>16</sup> passed rapidly from hand to hand as a consequence of the multiplicity of  
9 deaths in the army. Such a concession passed from one to the other until the seventh or eighth holder, to  
10 fall finally [into the hands] of artisans, such as tailors, shoemakers, or public criers, and these mounted the  
11 horse, donned the [military] headdress, and dressed in military tunics.

12 Actually no one collected the whole revenue of his endowment, and a number of holders  
13 harvested absolutely nothing. During the flooding of the Nile<sup>17</sup> and the tie of the sprouting of vegetation,  
14 one could procure a laborer only with difficulty: on half the lands only did the harvest reach maturity.  
15 Moreover, there was no one to buy the green clover [as feed] and no one sent their horses to graze over  
16 the field. This was the ruin of royal properties in the suburbs of Cairo, like Matarieh, Hums, Siryaqus, and  
17 Bahtit. In the canton [administrative district] of Nay and Tanan, 1500 *feddans*<sup>18</sup> of clover were abandoned  
18 where it stood: no one came to buy it, either to pasture their beasts on the place or to gather it into barns  
19 and use it as fodder.

20 The province of Upper Egypt was deserted, in spite of the vast abundance of cultivable terrain. It  
21 used to be that, after the land surface was cultivated in the territory of Asyut,<sup>19</sup> 6,000 individuals were  
22 subject to payment of the property tax; now, in the year of the epidemic [1348-1349], one could not count  
23 on more than 106 contributors. Nevertheless, during this period, the price of wheat did not rise past fifteen  
24 dirhams per *ardeb*.<sup>20</sup>

25 Most of the trades disappeared, for a number of artisans devoted themselves to handling the dead,  
26 while the others, no less numerous, occupied themselves in selling off to bidders [the dead's] movable  
27 goods and clothing, so well that the price of linen and similar objects fell by a fifth of their real value at  
28 the very least, and still further until one found customers. . . .

29 Thus the trades disappeared: one could no longer find either a water carrier, or a laundress, or a  
30 domestic. The monthly salary of a groom rose from thirty *dirhams* to eighty. A proclamation made in  
31 Cairo invited the artisans to take up their old trades, and some of the recalcitrant reformed themselves.  
32 Because of the shortage of men and camels, a goatskin of water reached the price of eight *dirhams*, and in  
33 order to grind an *ardeb* of wheat, one paid fifteen *dirhams*.

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<sup>15</sup> Arabic word for plowman or tiller, which also denoted the peasantry of Egypt and is the origin of the modern term, *fellahin*.

<sup>16</sup> Mamluk commanders and elite soldiers, like their Ayyubid predecessors, were paid out of the revenues of land grants, known as *iqtas* (similar to fiefs in Europe). With the dearth of labor caused by the Black Death, it became far more difficult to extract income from these estates.

<sup>17</sup> This usually took place between September and November of every year.

<sup>18</sup> A *feddan* is equivalent to 1.038 acres.

<sup>19</sup> Located along the Nile in Upper Egypt, about midway between Cairo and Aswan.

<sup>20</sup> An *ardeb* is equivalent to 5.62 bushels.

William H. McNeill<sup>21</sup>  
*Consequences of the Black Death in Europe*

In this selection, William H. McNeill, a leading world historian, explores the psychological, cultural, and economic consequences of the Black Death in Europe. What, according to McNeill, were these consequences? Which do you think were most important?

*Thinking Historically*

McNeill uses the term consequences rather than effects. Do the words mean the same thing, or are his “consequences” too general to be attached to specific causes? In fact, he lists some of the major changes that occurred in European culture and economy in the centuries after the Black Death. Which of these consequences was likely caused by the Black Death? In the last sentence of this selection, McNeill makes a distinction between effects that depend on a single cause “alone” and on causes that “contributed” to a broader effect. What does h mean by this distinction?

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Before pursuing this theme, however, it seems worth venturing a few remarks about the psychological, economic, and cultural consequences of Europe’s encounter with the plague in the fourteenth and succeeding centuries; and then we must survey as best we can the disease consequences for Asia and Africa of the Mongol opening of the steppelands to regular transit.

At the psychological and cultural level European reactions were obvious and varied. In face of intense and immediate crisis, when an outbreak of plague implanted fear of imminent death in an entire community, ordinary routines and customary restraints regularly broke down. In time, rituals arose to discharge anxiety in socially acceptable ways; but in the fourteenth century itself, local panic often provoked bizarre behavior. The first important effort at ritualizing responses to the plague took extreme and ugly forms. In Germany and some adjacent parts of Europe, companies of Flagellants aimed at propitiating God’s wrath by beating each other bloody and attacking Jews, who were commonly accused of spreading the pestilence. The Flagellants disdained all established authorities of church and state and, if accounts are to be believed, the rituals were well-nigh suicidal for the participants.

Attacks on German-Jewish communities inspired by Flagellants and others probably accelerated an eastward shift of centers of Jewish population in Europe. Poland escaped the first round of plague almost entirely, and though popular rioting against Jews occurred there too, royal authorities welcomed German Jews for the urban skills they brought into the country. The subsequent development of east European Jewry was therefore significantly affected (and the rise in the Vistula and Nieman valleys of a market-oriented agriculture, largely under Jewish management, was probably accelerated) by the fourteenth-century pattern of popular reaction to plague.

These and other violent episodes attest the initial impact of the plague on European consciousness. In time, the fear and horror of the first onset relaxed. Writers as diverse as Boccaccio, Chaucer, and William Langland all treated plague as a routine crisis of human life – an act of God, like the weather. Perhaps the plague had other, more lasting, consequences for literature: scholars have suggested, for instance, that the rise of vernacular tongues as a medium for serious writing and the decay of Latin as a lingua franca among the educated men of western Europe was hastened by the die-off of clerics and teachers who knew enough Latin to keep that ancient tongue alive. Painting also responded to the plague-darkened vision of the human condition provoked by repeated exposure to sudden, inexplicable death. Tuscan painters, for instance, reacted against Giotto’s serenity, preferring sterner, hieratic portrayals of religious scenes and figures. The “Dance of Death” became a common theme for art; and several other macabre motifs entered the European repertory. The buoyancy and self-confidence, so characteristic of the thirteenth century, when Europe’s great cathedrals were abuilding, gave way to a

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<sup>21</sup> William H. McNeill, *Plagues and Peoples* (Garden city, N.Y.: Anchor Books, 1976), 161-165.

1 more troubled age. Acute social tensions between economic classes and intimate acquaintance with  
2 sudden death assumed far greater importance for almost everyone than had been true previously.

3 The economic impact of the Black Death was enormous, though local differences were greater  
4 than an earlier generation of scholars assumed. In highly developed regions like northern Italy and  
5 Flanders, harsh collisions between social classes manifested themselves as the boom times of the  
6 thirteenth century faded into the past. The plague, by disrupting wage and price patterns sharply,  
7 exacerbated these conflicts, at least in the short run. Some ninety years ago Thorold Rogers argued that  
8 the Black Death had improved the lot of the lower classes and advanced freedom by destroying serfdom.  
9 His idea was that labor shortage caused by plague deaths allowed wage earners to bargain among rival  
10 would-be employers and thus improve their real wages. This view is no longer widely believed. Local  
11 circumstances differed widely. Employers died as well as laborers; and manpower shortages proved  
12 evanescent in those towns where a vigorous market economy did effect a short-term rise in real wages.

13 In time, of course, the initial perturbations created by the plague tended to diminish. All the same,  
14 two general displacements of European culture and society can be discerned in the latter fourteenth and  
15 fifteenth centuries that seem plausibly related to the terrifying, constantly renewed experience of plague.

16 When the plague was raging, a person might be in full health one day and die miserably within  
17 twenty-four hours. This utterly discredited any merely human effort to explain the mysteries of the world.  
18 The confidence in rational theology, which characterized the age of Aquinas (d. 1274), could not survive  
19 such experiences. A world view allowing ample scope to arbitrary, inexplicable catastrophe alone was  
20 compatible with the grim reality of plague. Hedonism and revival of one or another form of fatalistic  
21 pagan philosophy were possible reactions, though confined always to a few. Far more popular and  
22 respectable was an upsurge of mysticism, aimed at achieving encounter with God in inexplicable,  
23 unpredictable, intense, and purely personal ways. Hesychasm<sup>22</sup> among the Orthodox, and more variegated  
24 movements among Latin Christians – e.g., the practices of the so-called Rhineland mystics, of the  
25 Brethren of the Common Life, and of heretical groups like the Lollards of England – all gave expression  
26 to the need for a more personal, antinomian access to God than had been offered by Thomist theology and  
27 the previously recognized forms of piety. Recurrence of plague refreshed this psychological need until the  
28 mid-seventeenth century; hence it is no accident that all branches of organized Christianity – Orthodox,  
29 Catholic, and Protestant – made more room for personal mysticism and other forms of communion with  
30 God, even though ecclesiastical authorities always remained uncomfortable when confronting too much  
31 private zeal.

32 Secondly, the inadequacy of established ecclesiastical rituals and administrative measures to cope  
33 with the unexampled emergency of plague had pervasively unsettling effects. In the fourteenth century,  
34 many priests and monks died; often their successors were less well trained and faced more quizzical if not  
35 openly antagonistic flocks. God's justice seemed far to seek in the way plague spared some, killed others;  
36 and the regular administration of God's grace through the sacraments (even when consecrated priests  
37 remained available) was an entirely inadequate psychological counterpoise to the statistical vagaries of  
38 lethal infection and sudden death. Anticlericalism was of course not new in Christian Europe; after 1346,  
39 however, it became more open and widespread, and provided one of the elements contributing to Luther's  
40 later success.

41 Because sacred rituals remained vigorously conservative, it took centuries for the Roman Church  
42 to adjust to the recurrent crises created by outbreaks of plague. Hence it was mainly in the period of the  
43 Counter-Reformation that psychologically adequate ceremonies and symbols for coping with recurrent  
44 lethal epidemics defined themselves. Invocation of St. Sebastian, who in early Christian centuries had  
45 already attracted to himself many of the attributes once assigned to Apollo, became central in Catholic  
46 rituals of prophylaxis against the plague. The suffering saint, whose death by arrows was symbolic of  
47 deaths dealt by the unseen arrows of pestilential infection, began to figure largely in religious art as well.  
48 A second important figure was St. Roch. He had a different character, being an exemplar and patron of  
49 the acts of public charity and nursing that softened the impact of plague in those cities of Mediterranean  
50 Europe that were most exposed to the infection.

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<sup>22</sup> Mystical religious practice by Orthodox monks which involved certain repetitive movements and recitation of prayer.

1 Protestant Europe never developed much in the way of special rituals for meeting epidemic  
2 emergencies. The Bible had little to say about how to cope with massive outbreaks of infectious disease,  
3 and since plague seldom affected the North (though when it came it was sometime exceptionally severe),  
4 Protestants lacked sufficient stimulus to such a development.

5 In contrast to the rigidities that beset the church, city governments, especially in Italy, responded  
6 rather quickly to the challenges presented by devastating disease. Magistrates learned how to cope at the  
7 practical level, organizing burials, safeguarding food deliveries, setting up quarantines, hiring doctors,  
8 and establishing other regulations for public and private behavior in time of plague. The ability of city  
9 authorities to react in these more or less effective ways was symptomatic of their general vigor – a vigor  
10 that made the centuries between 1350 and 1550 a sort of golden age for European city-states, especially  
11 Germany and Italy, where competition with any superior secular government was minimal.

12 Italian and German city governments and businessmen not only managed their own local affairs  
13 with general success, but also pioneered the development of a far more closely integrated inter-regional  
14 market economy that ran throughout all of Europe. Ere long these same cities also defined a more  
15 secularized style of life and thought that by 1500 attracted the liveliest attention throughout the continent.  
16 The shift from medieval to renaissance cultural values, needless to say, did not depend on the plague  
17 alone; yet the plague, and the generally successful way city authorities managed to react to its ravages,  
18 surely contributed something to the general transformation of European sensibility.

19 When we turn attention from Europe and ask what the new plague pattern may have meant  
20 elsewhere in the Old World, a troublesome void presents itself. Scholarly discussion of the Black Death in  
21 Europe, its course and consequences, is more than a century old; nothing remotely comparable exists for  
22 other regions of the earth. Yet it is impossible to believe that the plague did not affect China, India, and  
23 the Middle East; and it is even more implausible to think that human life on the steppe was not also  
24 brought under a new and unexampled stress by the establishment of a persistent reservoir of bubonic  
25 infection among the rodents of the Eurasian grasslands all the way from Manchuria to the Ukraine.

26 To be sure, there is ample evidence that plague became and remained, as in Europe, a dreaded  
27 recurrent affliction throughout the Islamic world. Egypt and Syria shared the plague experience of other  
28 parts of the Mediterranean coastlands with which they remained always in close contact. About a third of  
29 Egypt's population seems to have died in the first attack, 1347-1349, and the plague returned to the Nile  
30 Valley at frequent intervals thereafter, appearing there most recently in the 1940s.